

Armed Forces College of Medicine

AFCM



Submandibular region

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INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

- **List contents of submandibular region.**
- **Describe attachment, nerve supply & action of suprahyoid muscles.**
- **Identify shape, position and parts of submandibular and sublingual salivary glands**

Key points

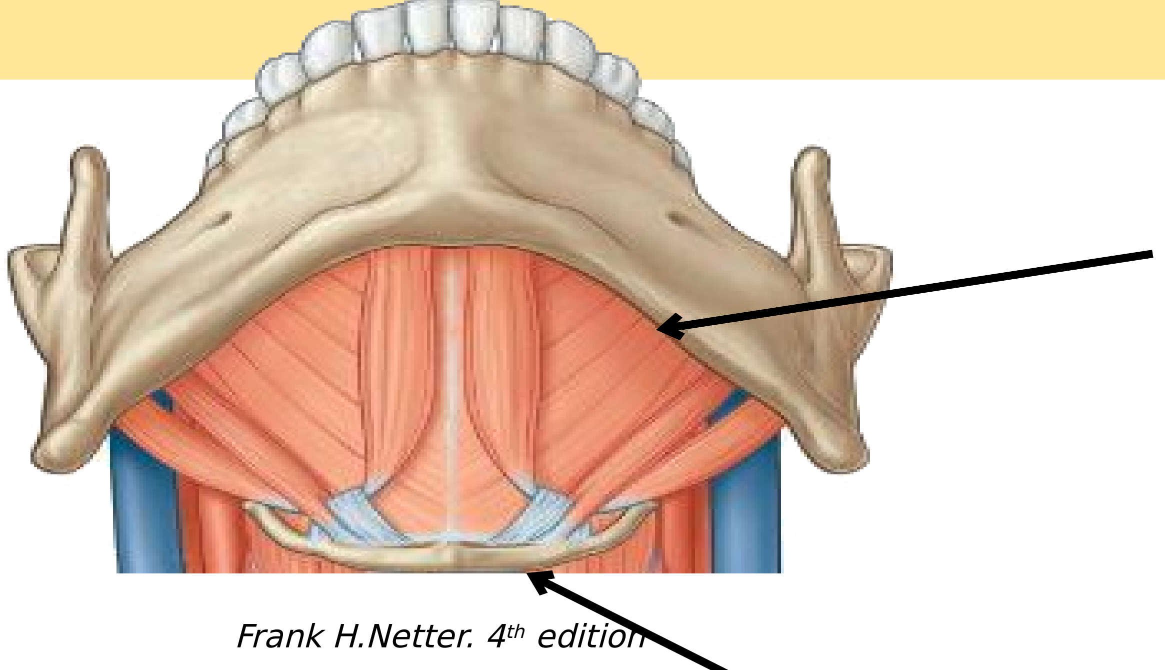


- **Suprahyoid muscles.**
- **Facial & lingual arteries in the submandibular region.**
- **Submandibular gland.**

Submandibular region



Submandibular (Suprahyoid) region includes structures in the area between mandible and hyoid bone.



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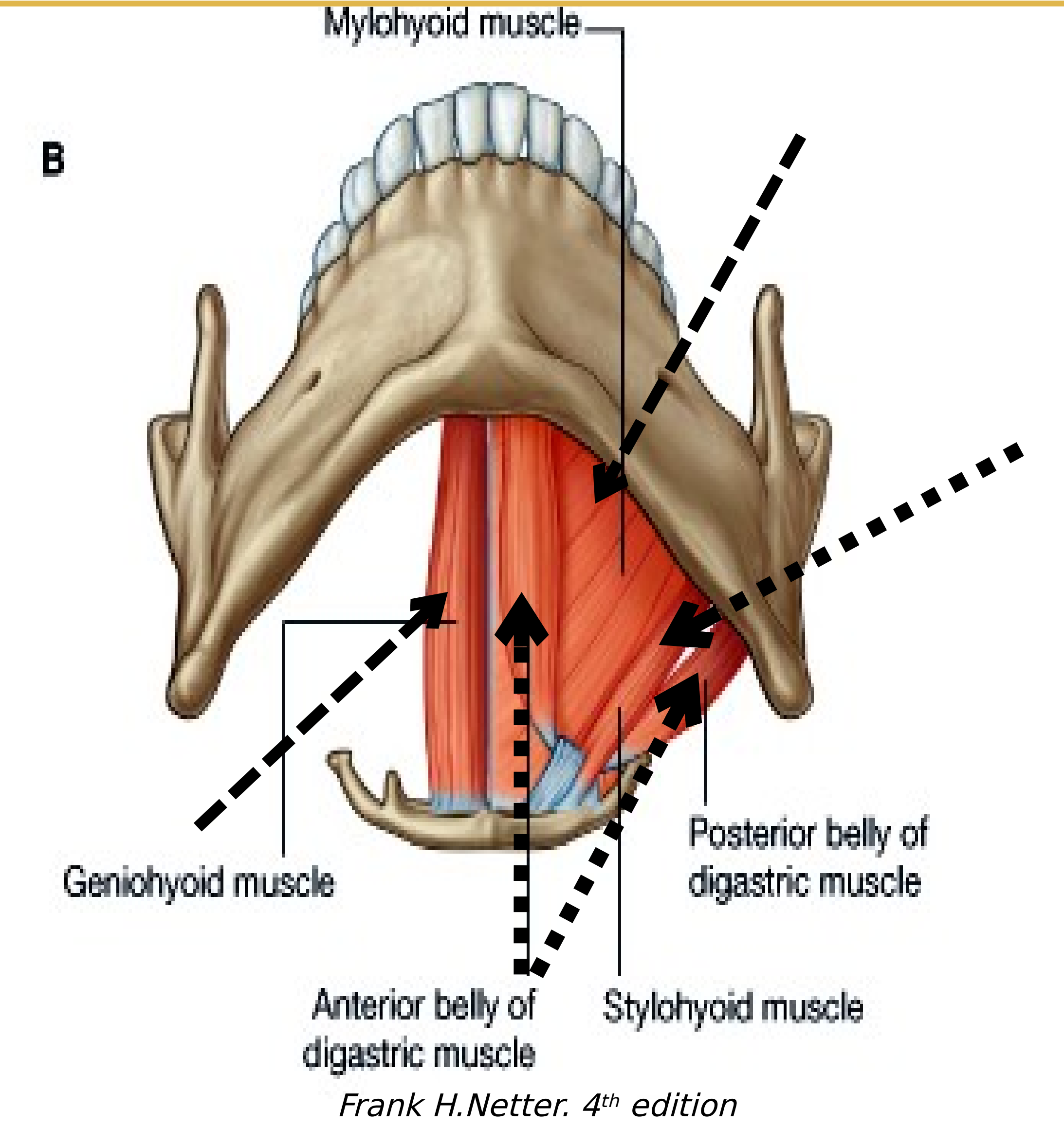
Contents of submandibular region



1) Muscles:

a) Suprahyoid muscles:

digastric, stylohyoid, mylohyoid and geniohyoid.



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Contents of submandibular region



b) **Extrinsic muscles of tongue**:

- **Styloglossus**
- **hyoglossus**
- **genioglossus.**

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Contents of submandibular region



2) Glands:

Submandibular and sublingual salivary glands.

Clinical Anatomy by regions, Richard Snell, 9th. Editio

Contents of submandibular region



3) Nerves:

Lingual, glossopharyngeal, hypoglossal nerves and Submandibular ganglion.

4) Blood vessels:

Lingual and

Glossopharyngeal nerve [IX]
Chorda tympani (from [VII])
Lingual nerve (from [V_3])
Hypoglossal nerve [XII]
Occipital artery
Hyoglossus
Deep lingual vein
Dorsal lingual vein
Lingual artery
Common carotid artery
Internal jugular vein
Sternocleidomastoid branch of occipital artery

Contents of submandibular region



facial vessels

Clinically oriented Anatomy, 5th edition, Keith Moore

Digastric muscle



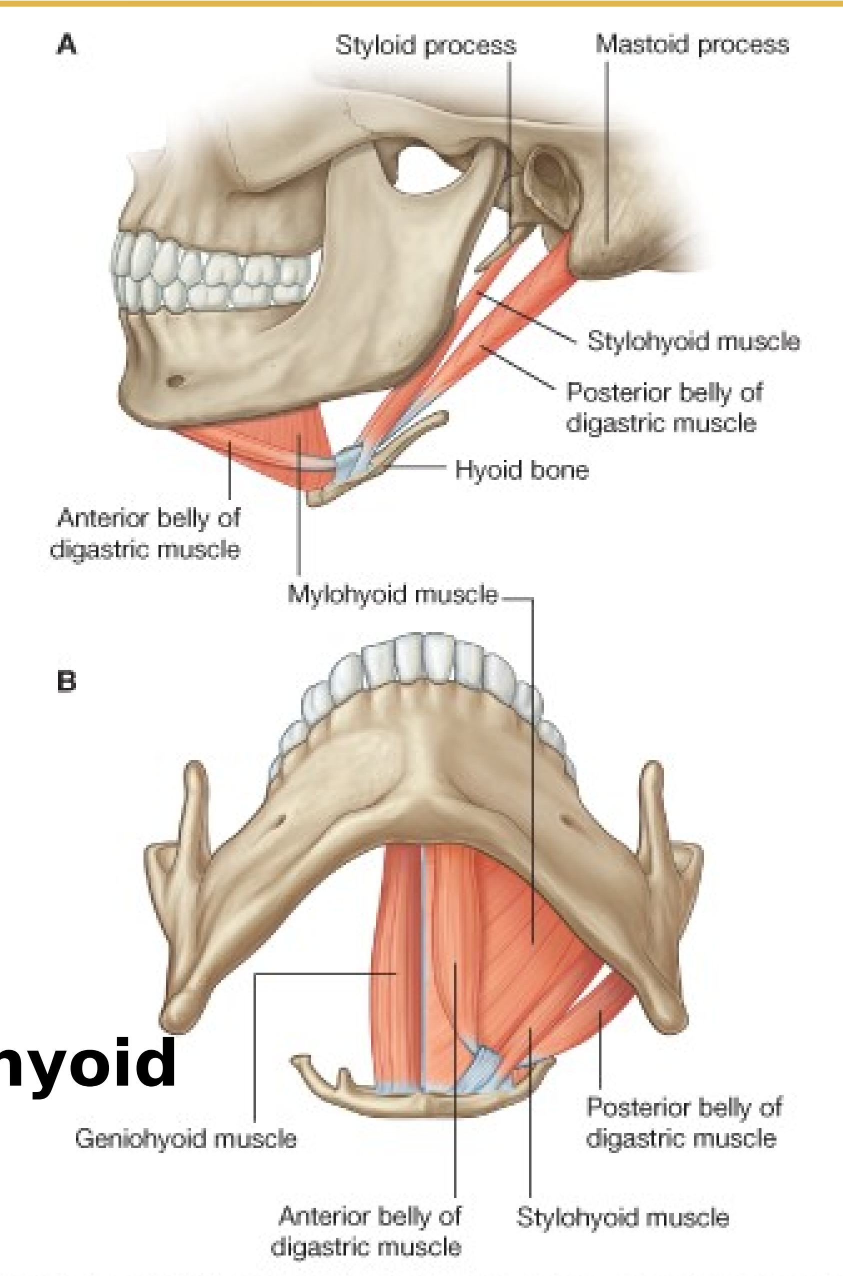
Origin :

a) Anterior belly:

Digastric fossa of the mandible

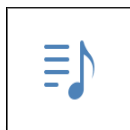
b) Posterior belly:

Digastric notch on medial surface of mastoid process.



Insertion:

Intermediate tendon which is held to hyoid bone by a fibrous loop

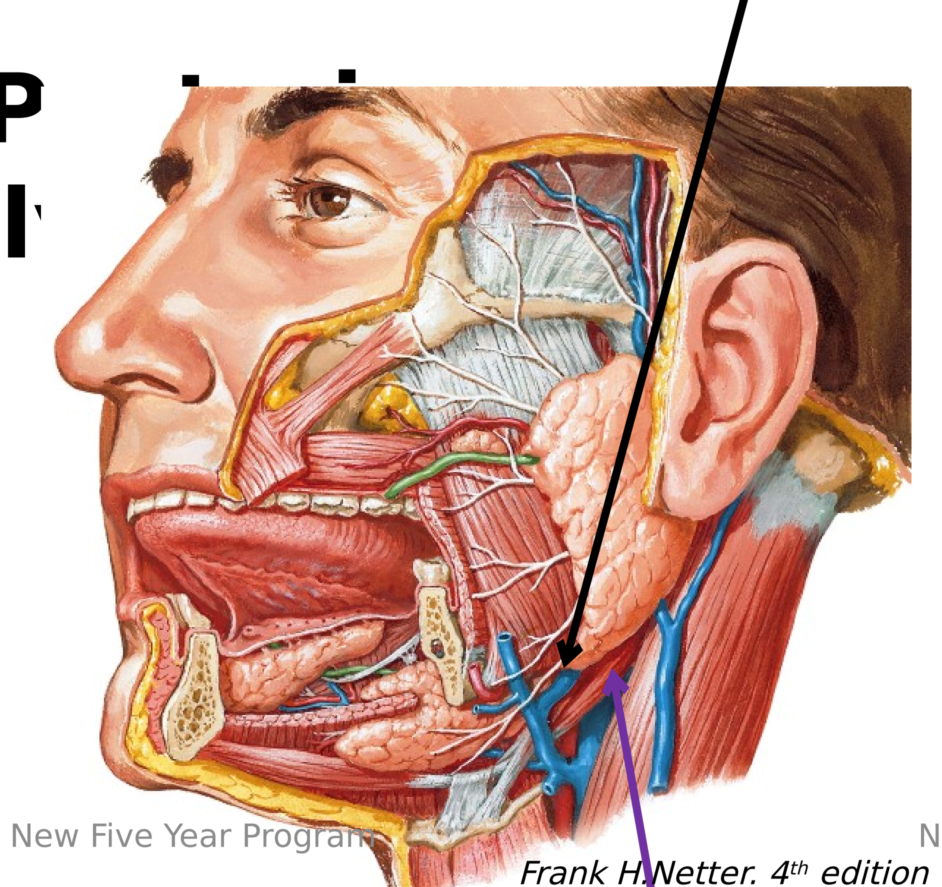


Nerve supply:

a) Anterior belly: n. to mylohyoid

b) P

bell

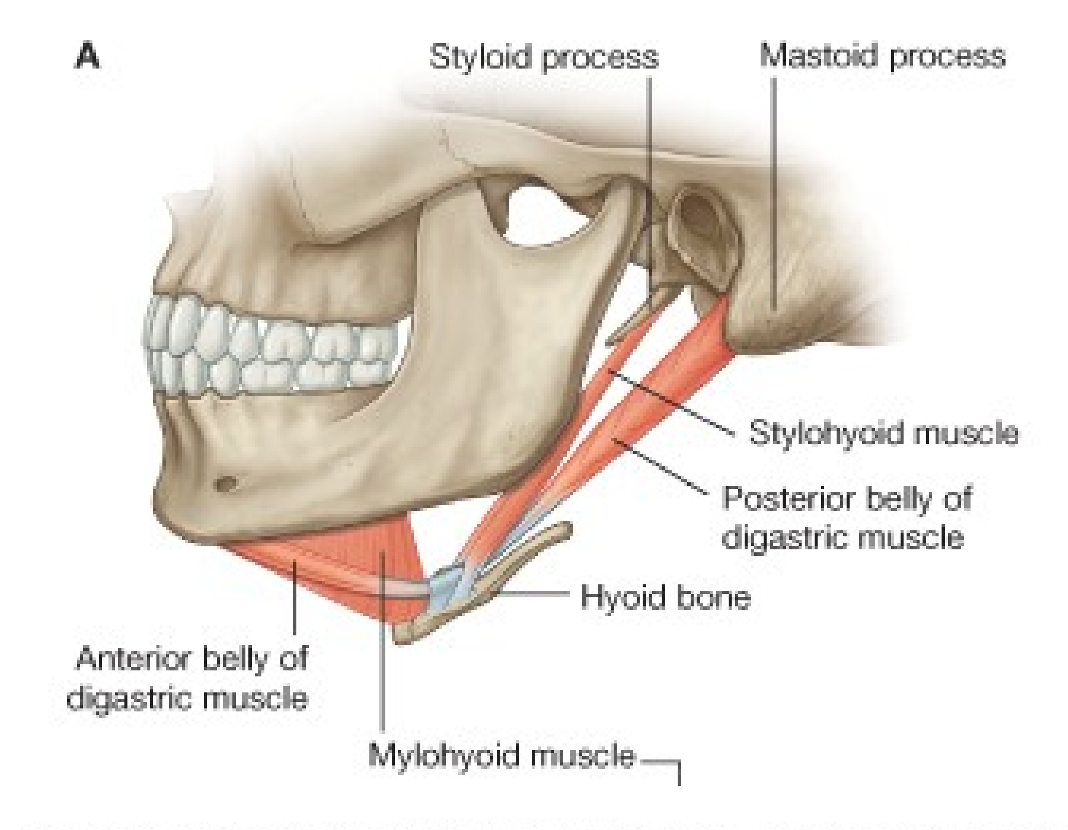


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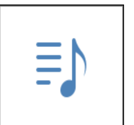
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Action:

a. If the hyoid bone is fixed, it depresses the mandible (helping lateral pterygoid m.).



b. Elevate hyoid bone during



Stylohyoid muscle

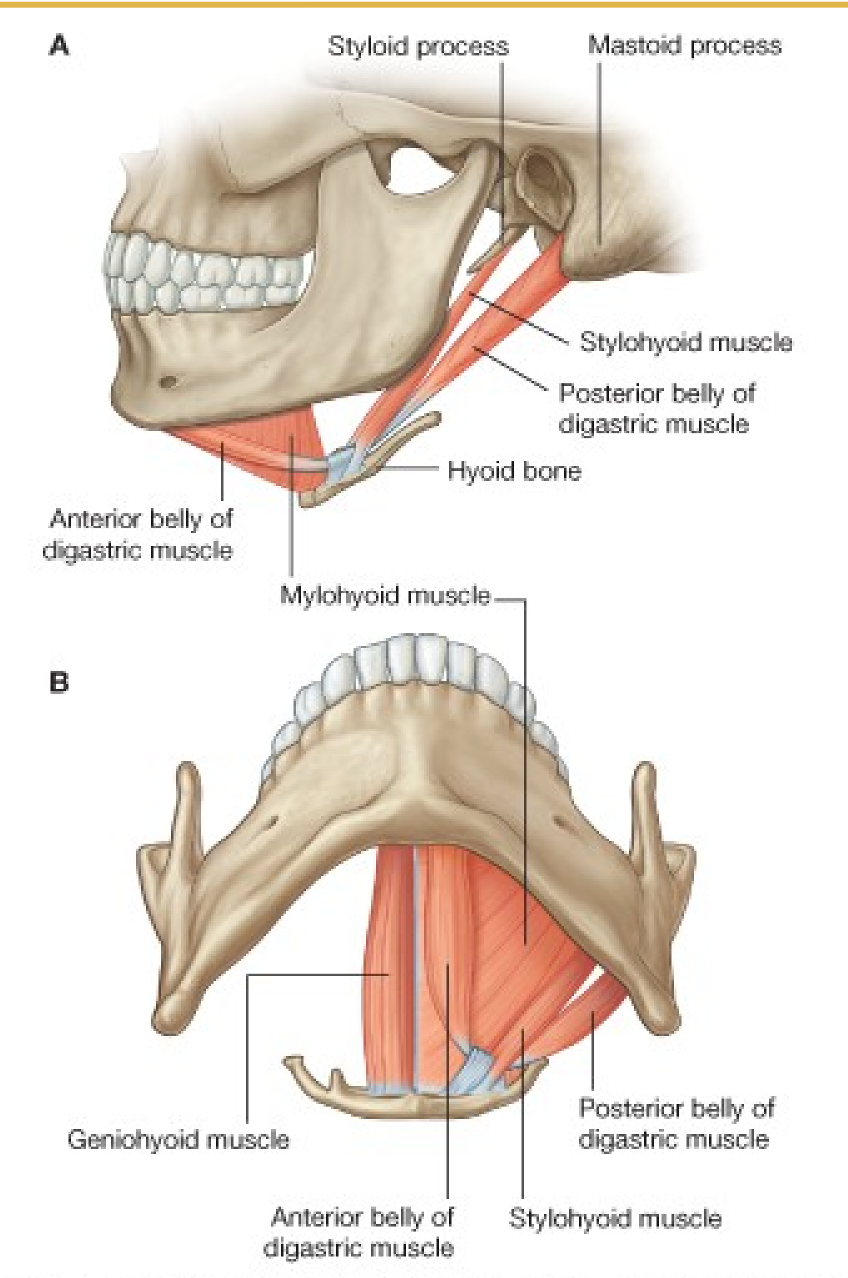


Origin :
styloid process.

Insertion:
Hyoid bone where its tendon is perforated by the posterior belly of digastric *m.*

Nerve supply :
Facial *n.*

Action :
pulls hyoid bone upward &



Mylohyoid muscle



Superior mental spines
Geniohyoid
Inferior mental spines
Mylohyoid
Geniohyoid
Mylohyoid

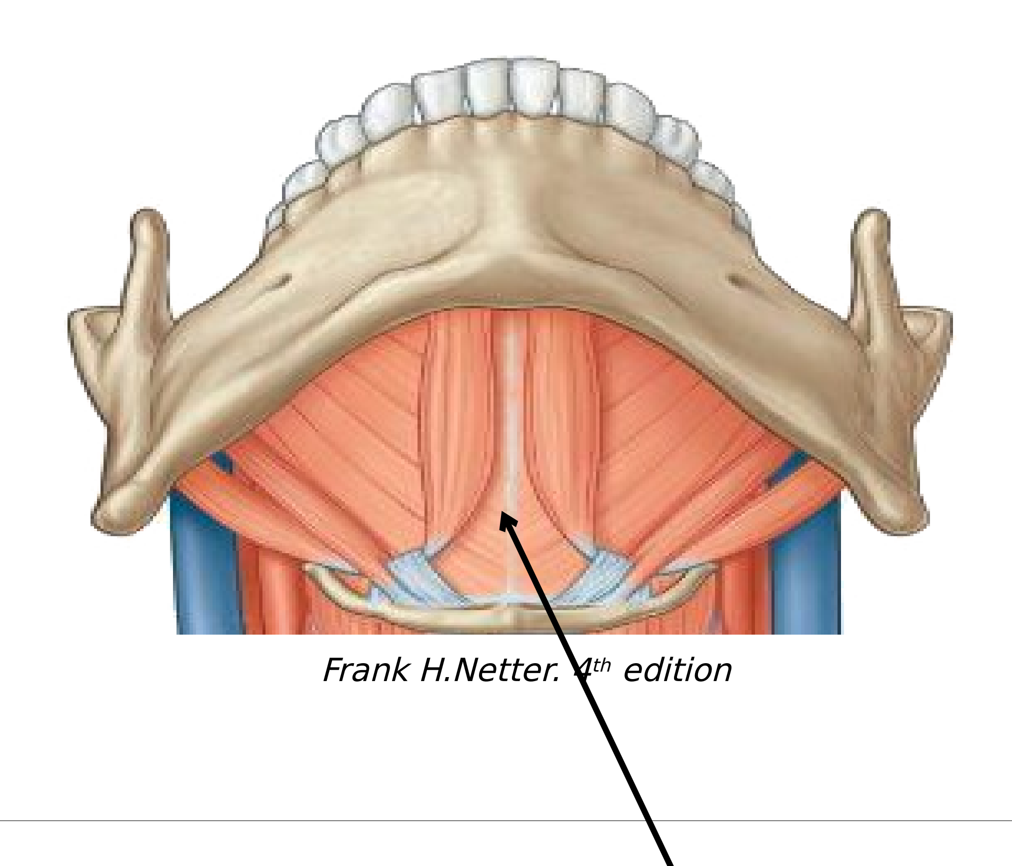
Origin :

Mylohyoid line of the mandible.



Mylohyoid muscle





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Insertion:

a) Anterior & middle fibers inserted into the mylohyoid raphe

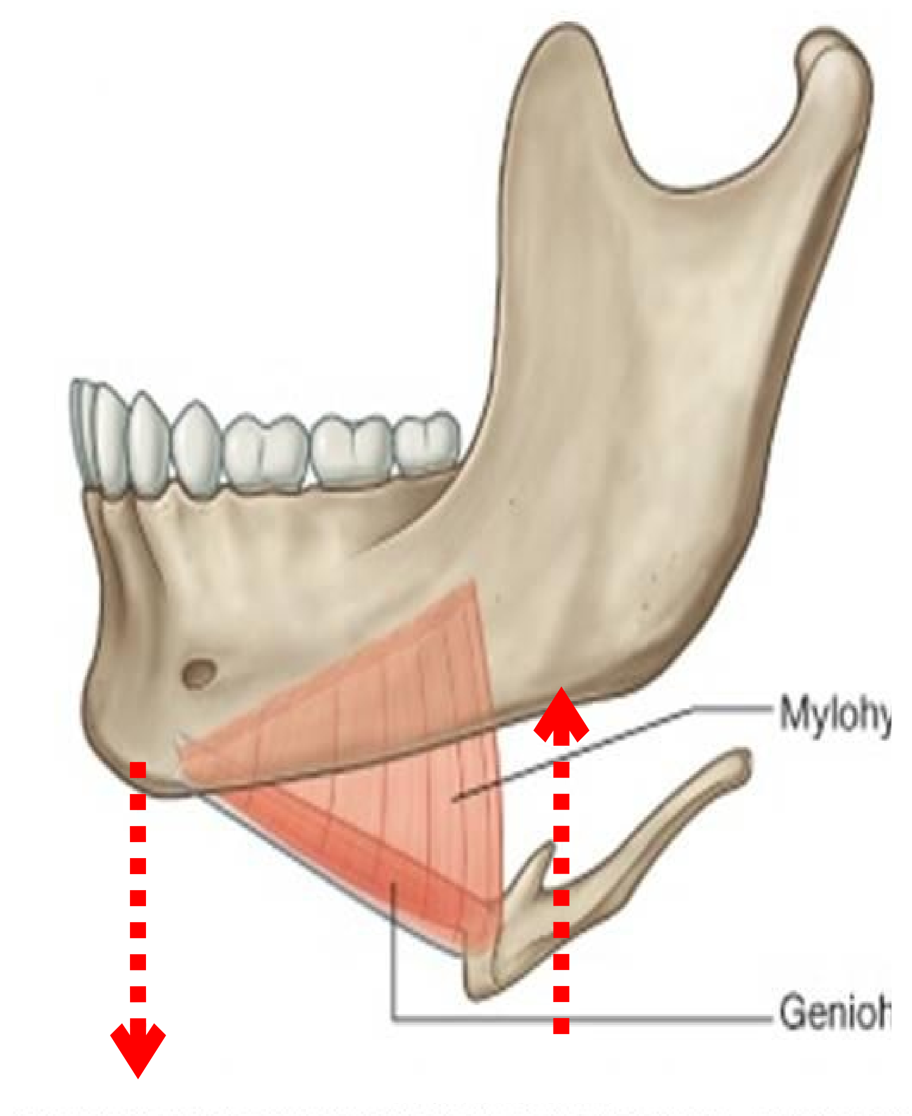
b) Posterior fibers into hyoid bone.



Mylohyoid muscle



Nerve supply :
Nerve to Mylohyoid
Action :
a. Elevates the floor of mouth during the early stage of swallowing.
b. Helps in depression of the mandible (*if the*



Geniohyoid muscle



Origin : **Inferior genial tubercle of body of mandible**

Insertion: **body of hyoid bone**

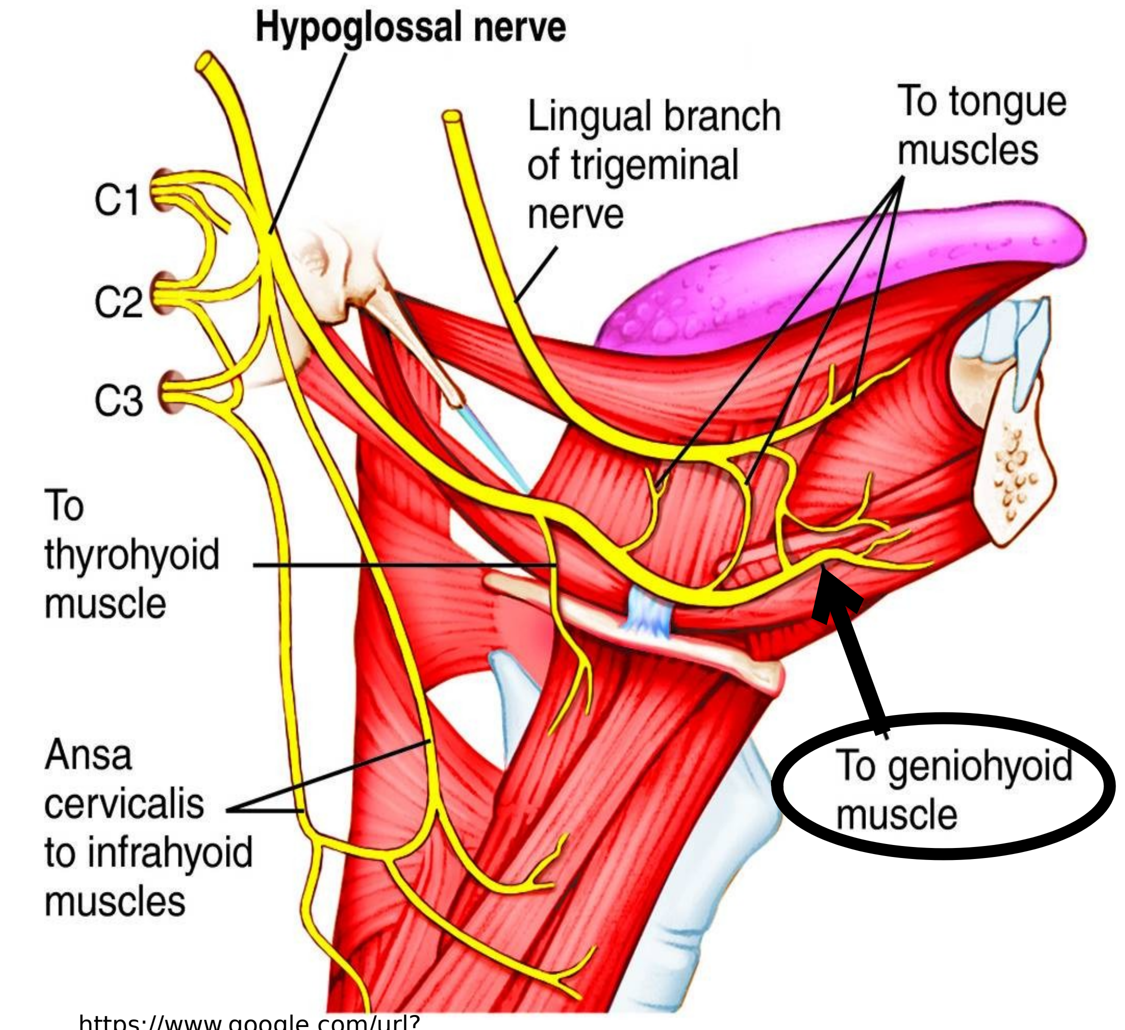
PALATOGLOSSUS
STYLOGLOSSUS
HYOGLOSSUS
GENIOGLOSSUS
Mylohyoid muscle (cut)
GENIOHYOID
Hyoid bone

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Geniohyoid muscle



Nerve supply :
C1 via Hypoglossal n



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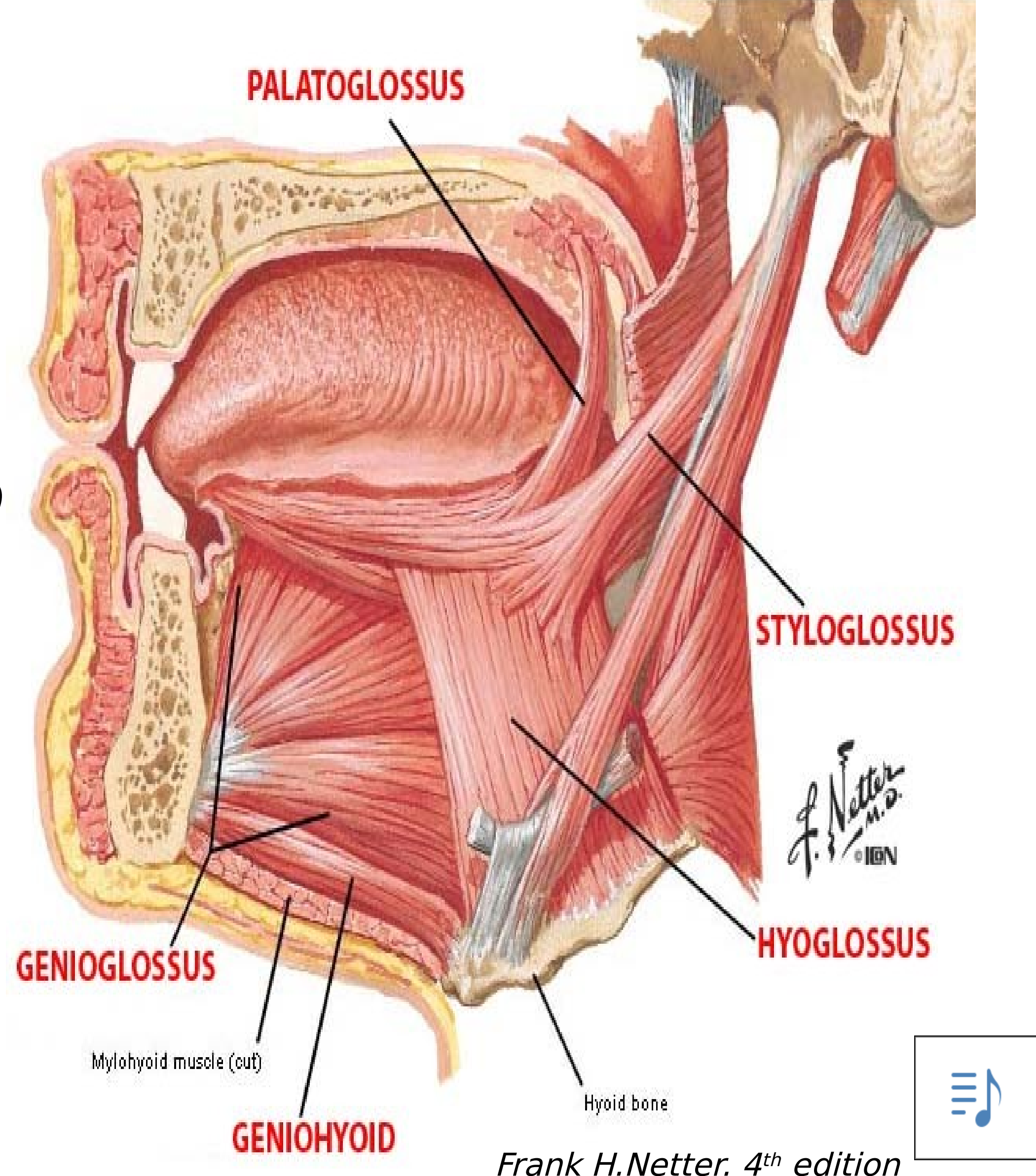


Geniohyoid muscle



Action :

Elevates hyoid bone, or depresses the mandible *(if the hyoid bone is fixe*

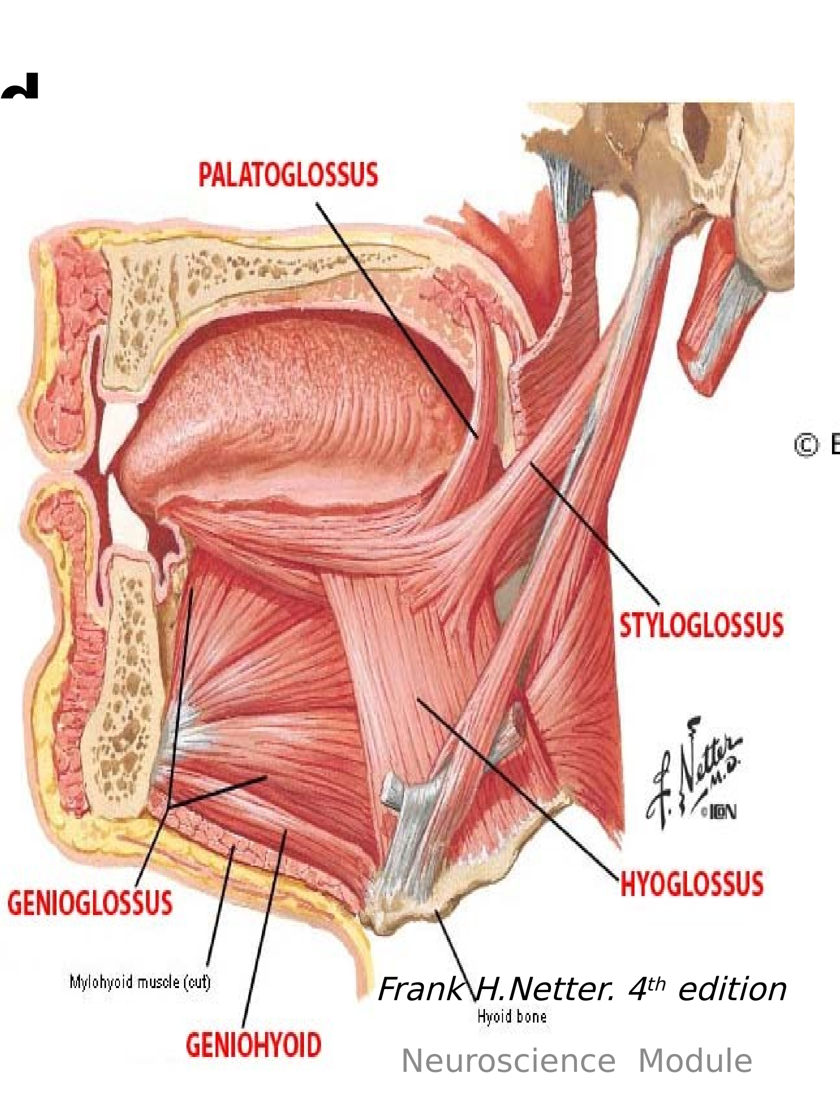


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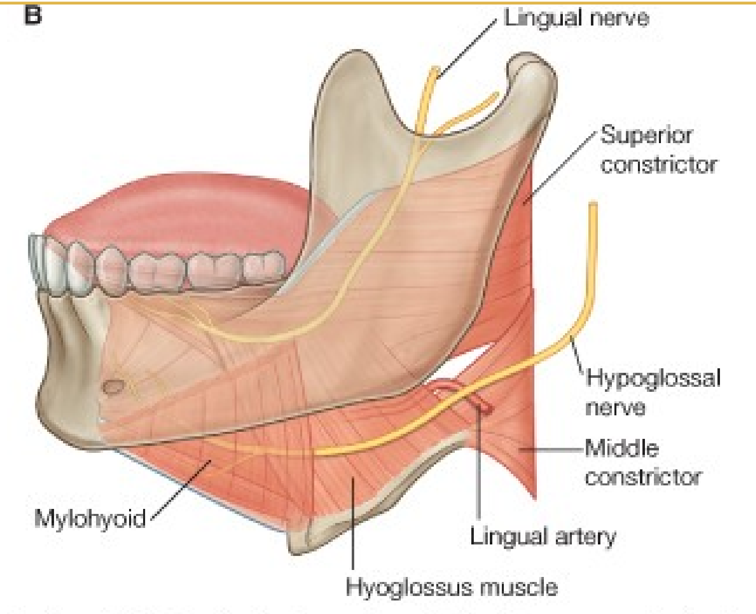
Hyoglossus muscle



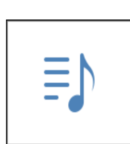
Origin:
Hyoid bone
Insertion :
Its fibers run upwar
deep to mylohyoid t
in posterior ½ of th
of the tongue



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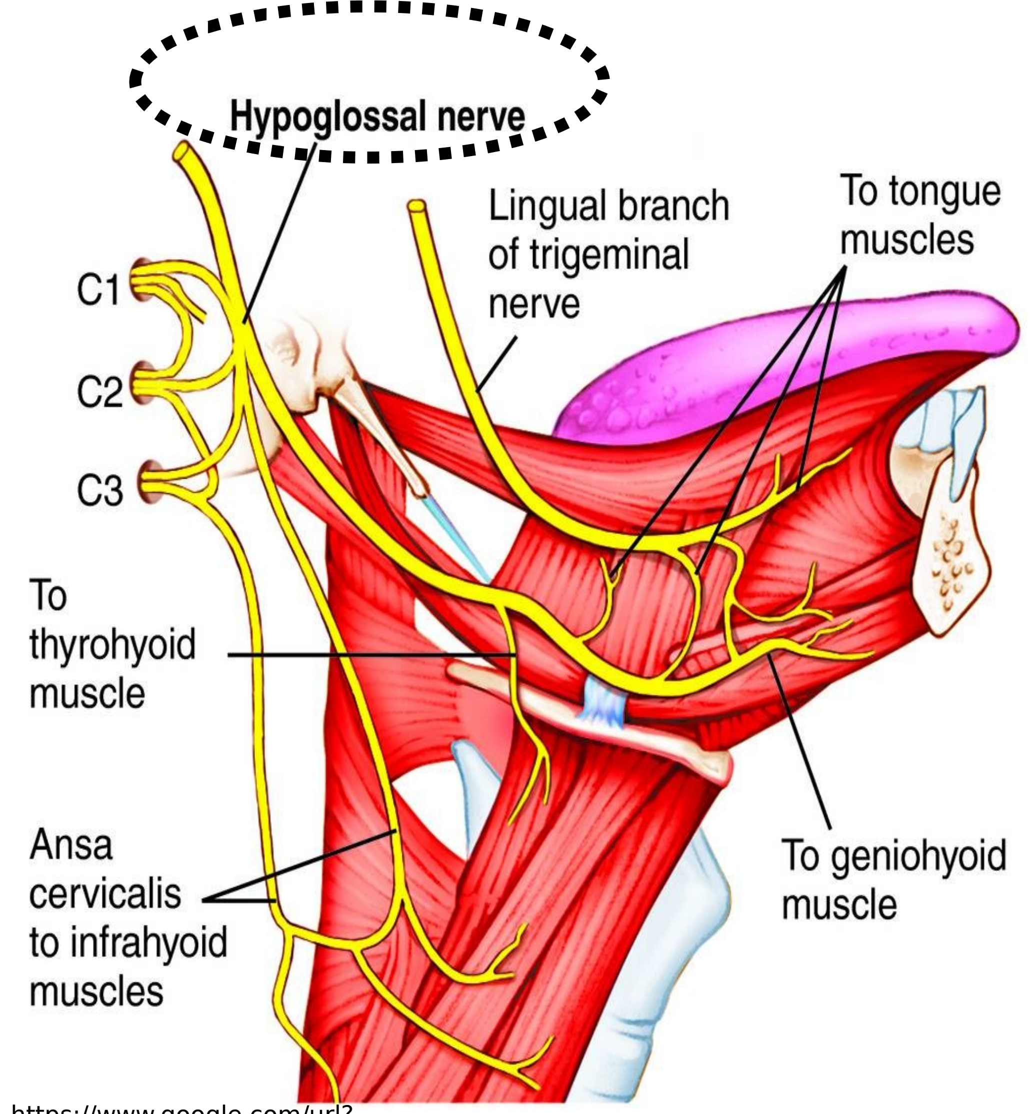


Nerve supply

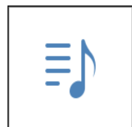
Hypoglossal nerve.

Action :

Depression of the tongue during swallowing



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Relations of hyoglossus muscle:

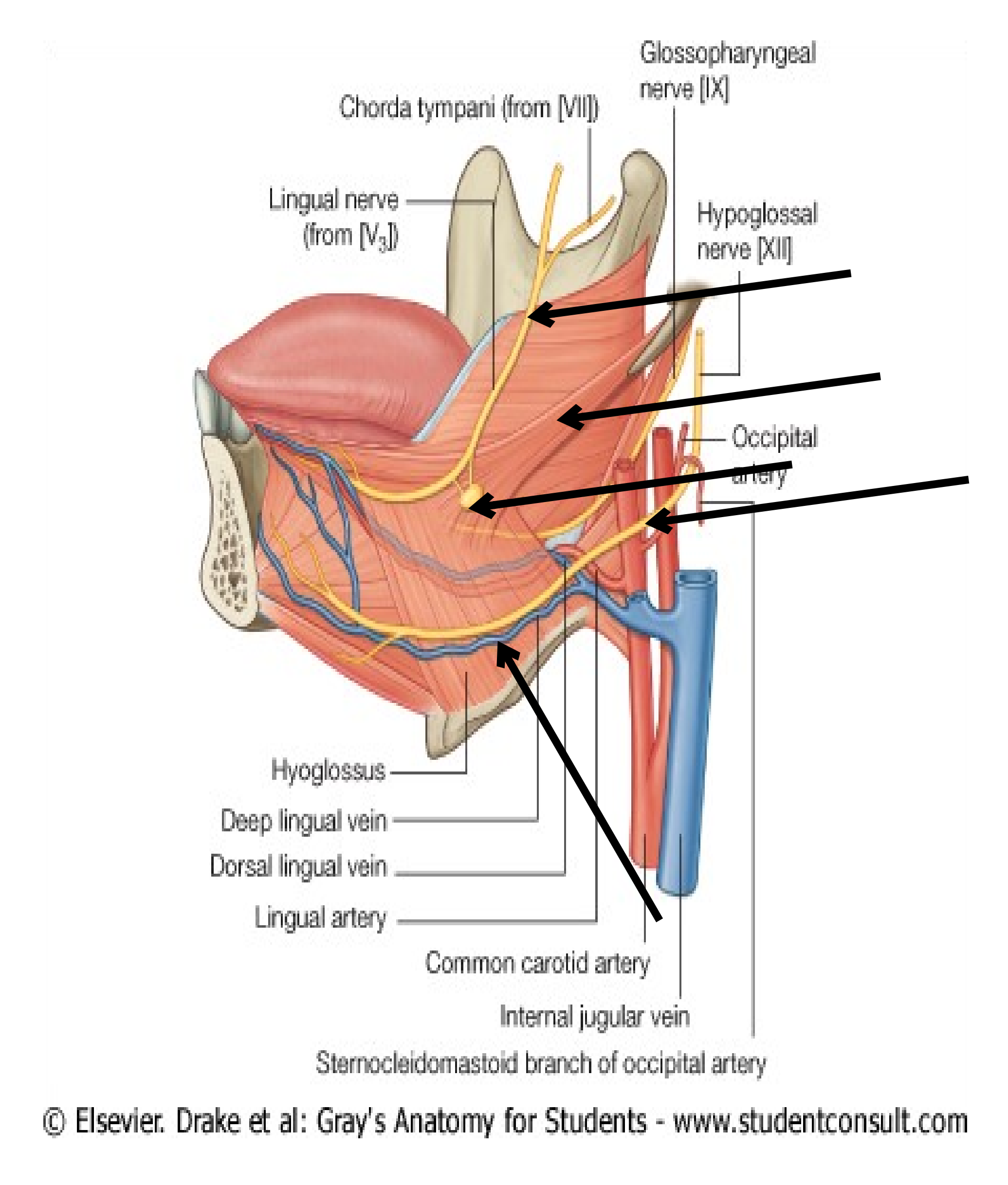
a) Superficial (lateral):

. 2 muscles: **styloglossus & mylohyoid.**

. 2 nerves: **lingual n. + submandibular ganglion + hypoglossal nerve.**

. Gland: **deep part of submandibular gland. + submandibular duct.**

. Vessel: deep lingual vein



Genioglossus muscle



Origin :
Upper genial tubercle of mandible

Insertion:
Whole length of under surface of tongue

Nerve supply
Hypoglossal nerve.





Quiz (supra-hyoid muscles)



A 65-year-old man is admitted to the emergency department after his head hit in an automobile collision. Radiographic and physical examinations reveal that the inferior alveolar nerve is injured at its origin. Which of the following muscles would most likely be paralyzed as a result?

A. Geniohyoid
B. Hyoglossus
C. Mylohyoid
D. Stylohyoid



Facial Artery



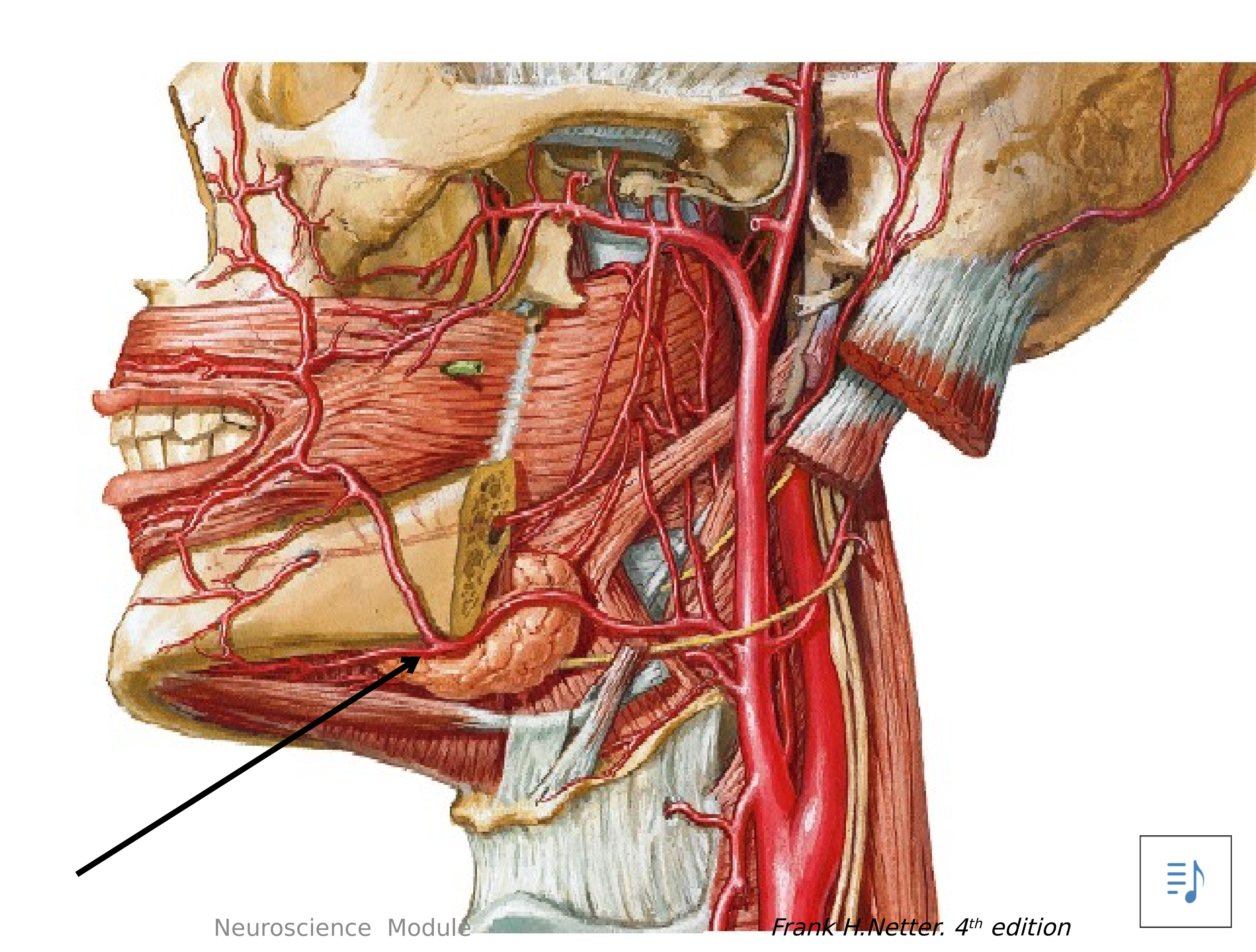
Origin:
From anterior aspect of ECA

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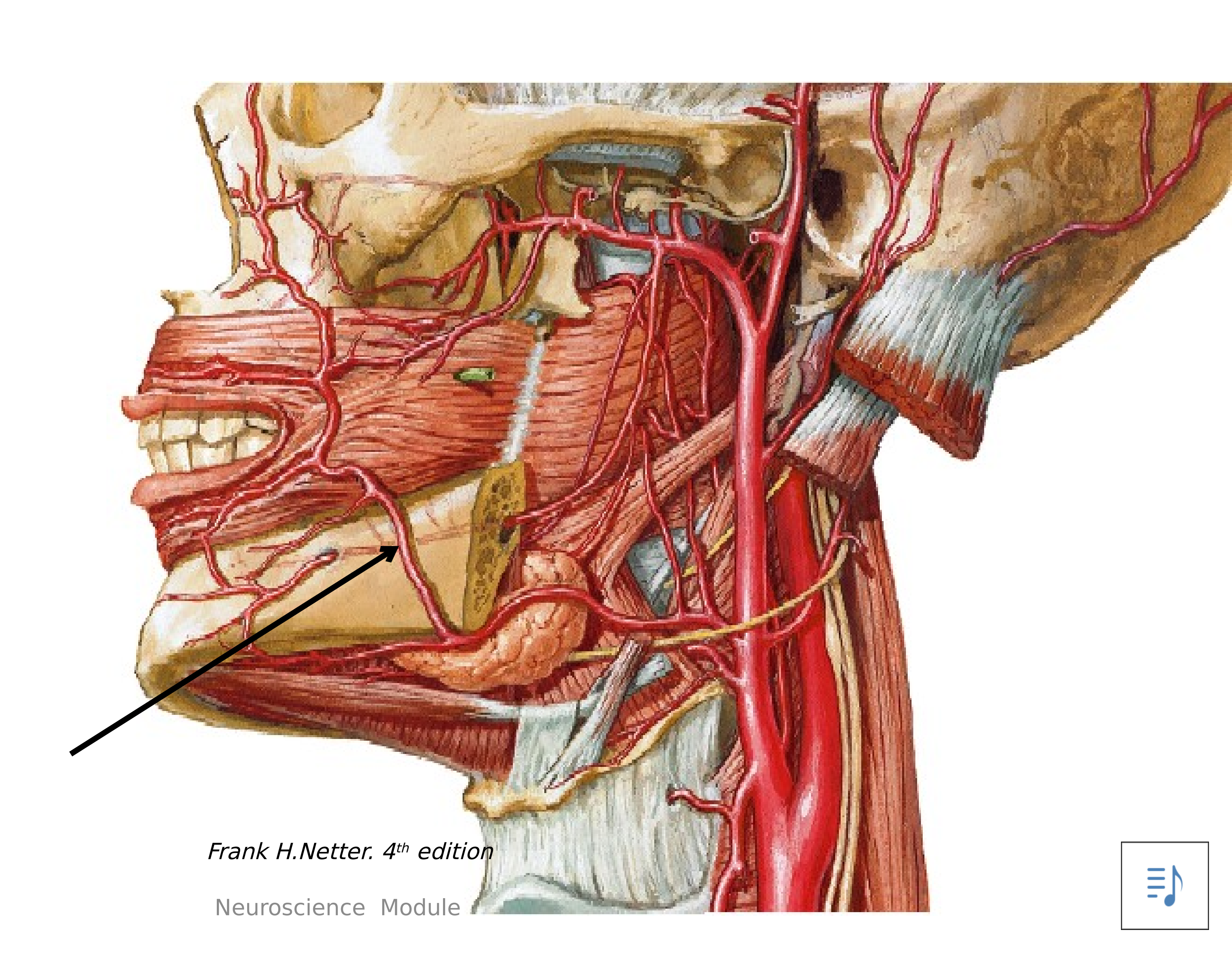
Course and relations:
Cervical part &Facial part:
Will describe the cervical part:

a. **Ascends vertically deep to posterior belly of digastric & stylohyoid ms.**

b. **Grooves the submandibular gland**



c. Passes downward between the gland and the mandible → finally curves around the lower border of mandible → enter the face at the antero-inferior angle



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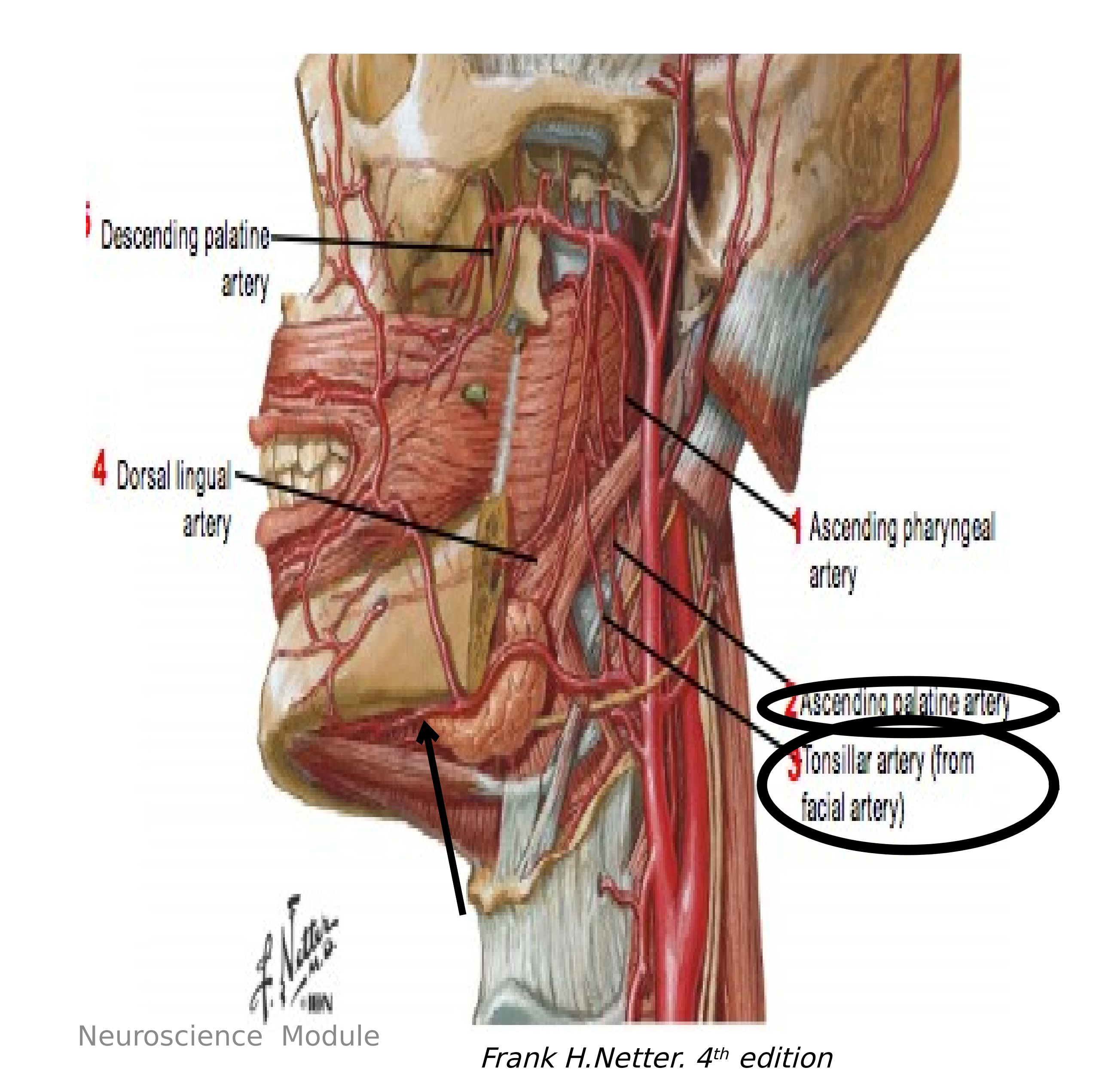
Branches

a. **Ascending palatine**

b. **Tonsillar** to palatine tonsil.

c. **Glandular** to submandibular salivary gland.

d. **Submental** to submental



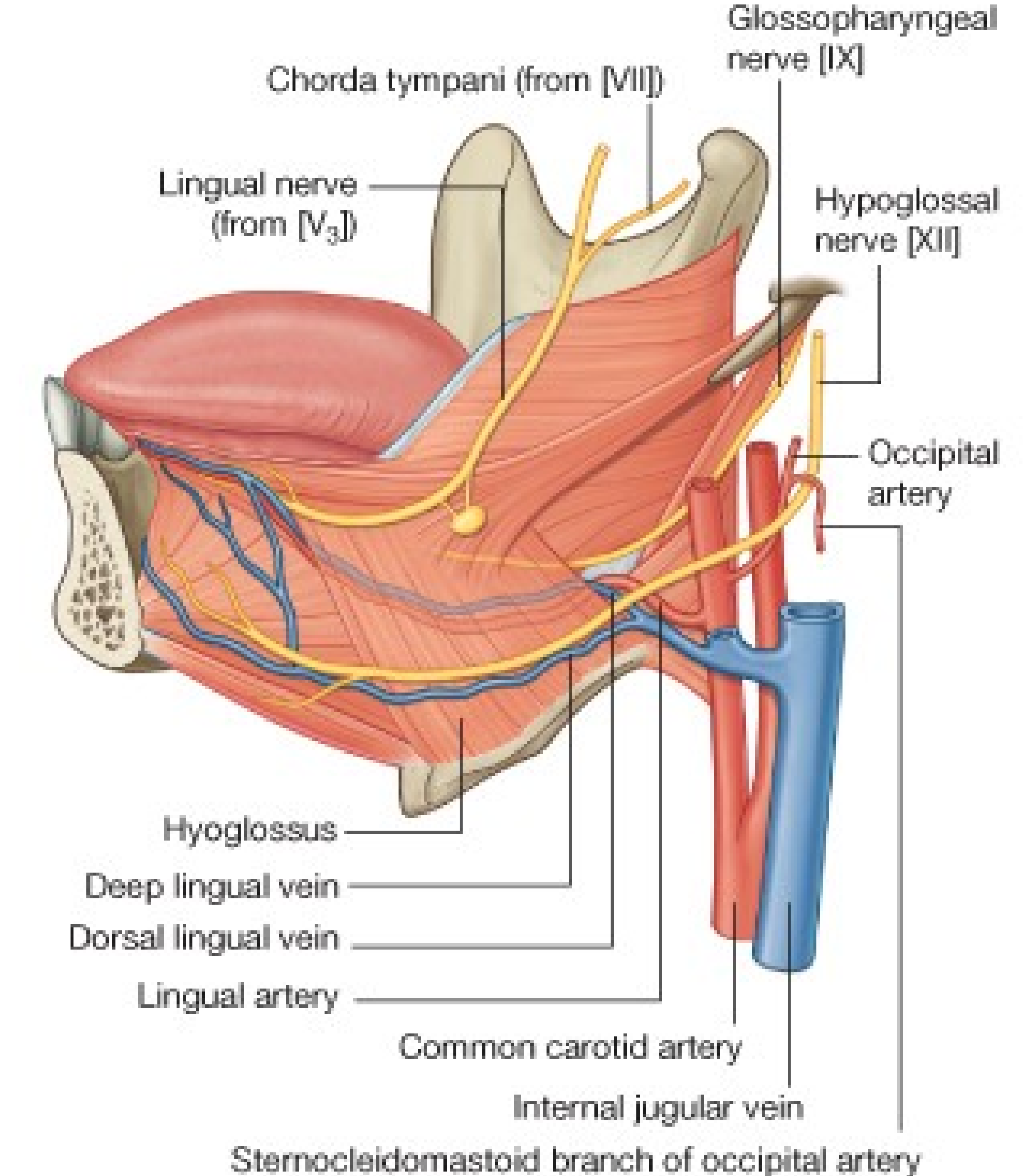
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Lingual Artery



Origin: **from anterior aspect of ECA in carotid triangle**

Its course is tortuous & is divided by hyoglossus m. into 3 parts





Lingual Artery

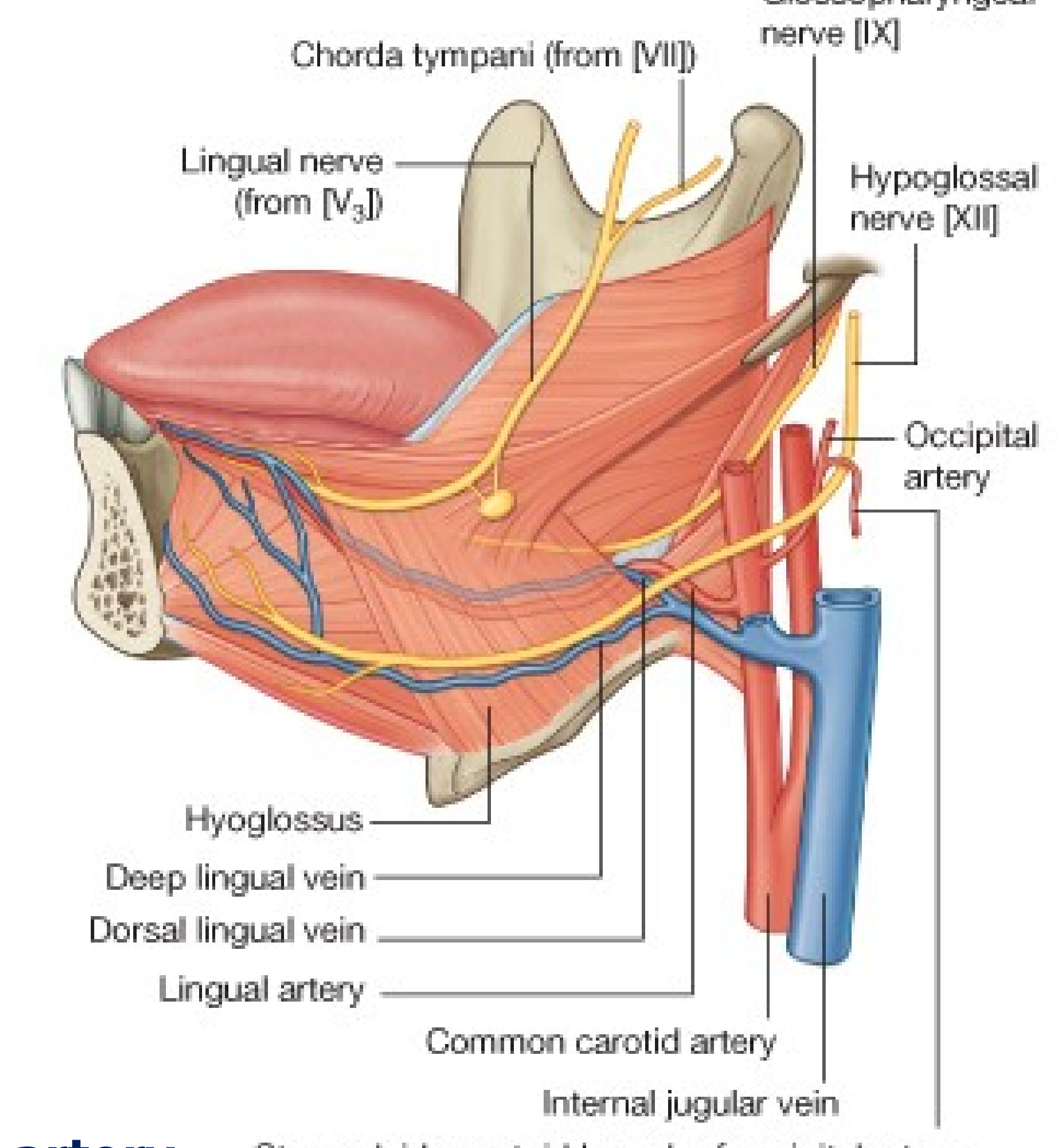


1st part (before hyoglossus): forms a loop opposite the hyoid bone, crossed superficially by the hypoglossal n.

2nd part (deep to hyoglossus).

3rd part (after hyoglossus), ascends along the anterior border of hyoglossus then runs on the under surface of tongue to end by anastomosing with its

hes: 2 dorsal lingual arteries and sublingual artery.





Quiz (Facial & lingual arteries)



Which one of the following nerves crosses superficial to the lingual artery?

a) Hypoglossal
b) Facial
c) Glossopharyngeal
d) Lingual
e) Chorda tympani



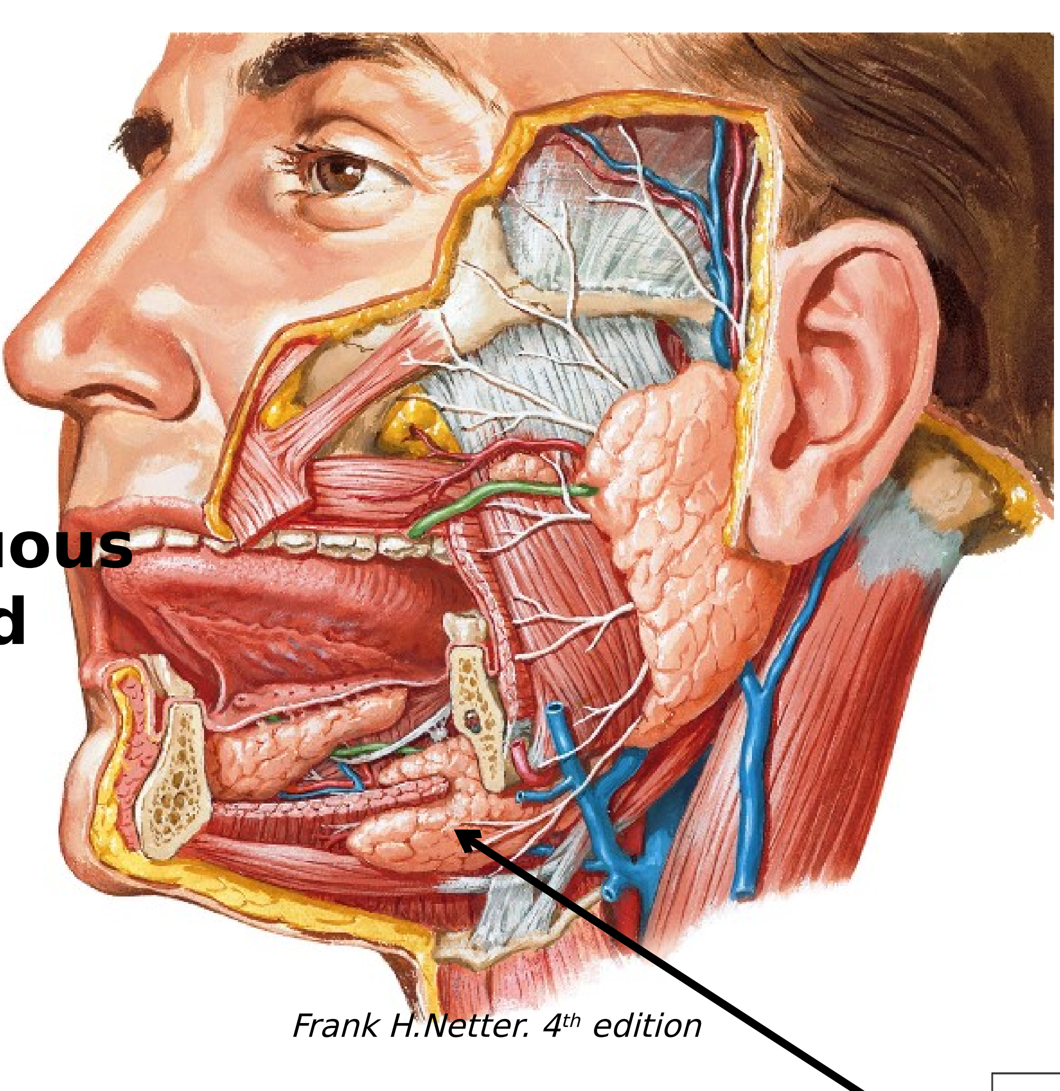
Submandibular gland



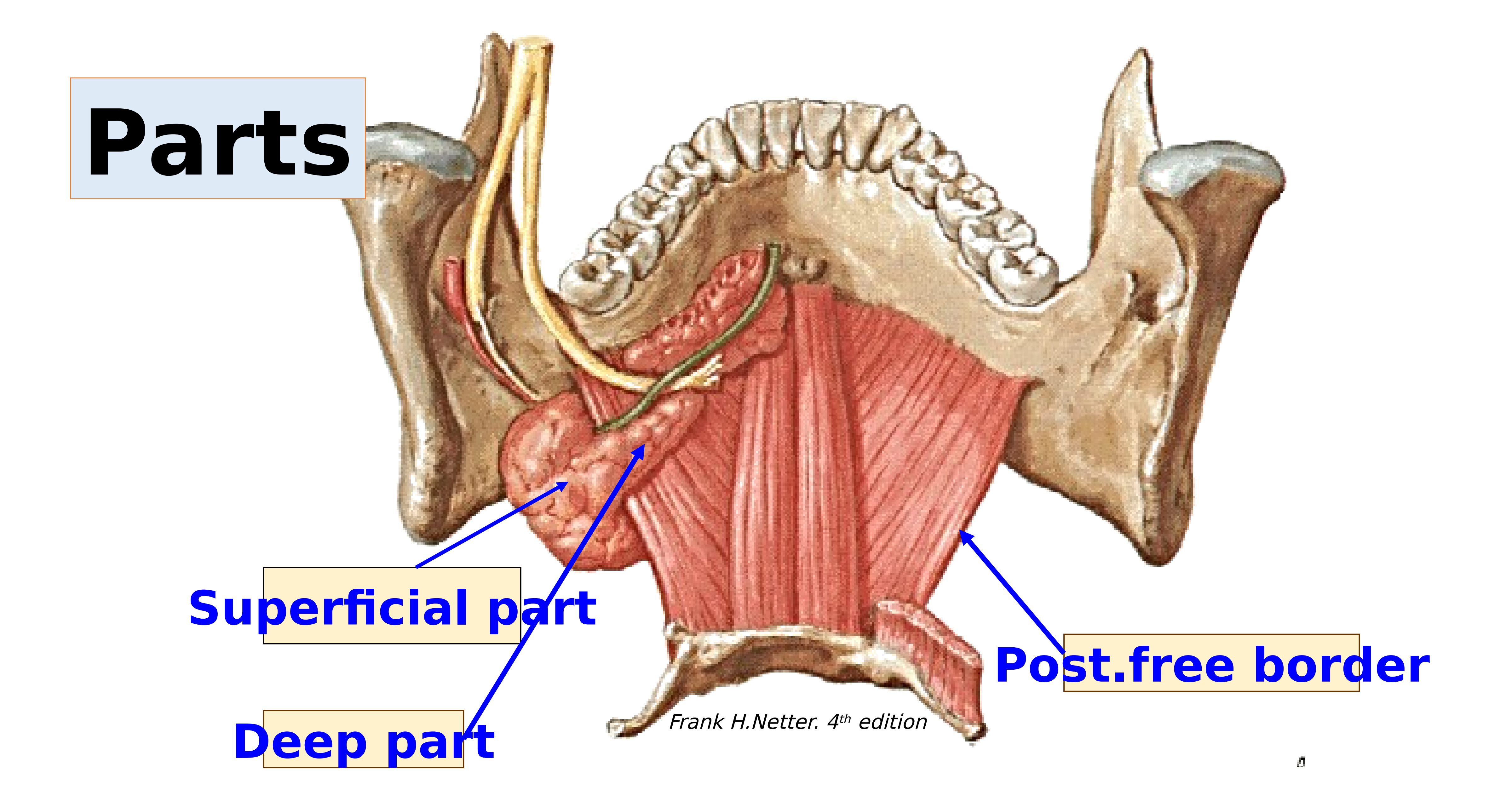
It is wedge shaped.

It lies deep to the body of mandible.

It has superficial & deep parts, continuous round the posterior border of mylohyoid



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Parts
Superficial part
Deep part
Post.free border
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Sublingual gland



- **It is almond shaped.**
- **It occupies sublingual fossa of the mandible.**
- **It lies below the mucosa of the floor of the mouth forming the sublingual fold.**

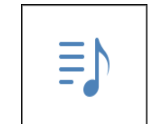
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Quiz (Submandibular gland)



Superficial & deep parts of the submandibular gland are continuous around which of the following muscles?

A. Geniohyoid
B. Hyoglossus
C. Mylohyoid
D. Stylohyoid
E. Palatoglossus



Summary



- **Muscles in the submandibular region (supra-hyoid & extrinsic tongue muscles).**
- **Nerves & vessels in the submandibular region.**
- **Submandibular and sublingual salivary glands.**

SUGGESTED TEXTBOOKS



1. Clinical Anatomy by Regions, Richard Snell, 9th edition,

page 589.
2. Clinically Oriented Anatomy, 5th Edition, Moore, Keith L.; Dalley, Arthur F.
Pages 1068 & 1069.